

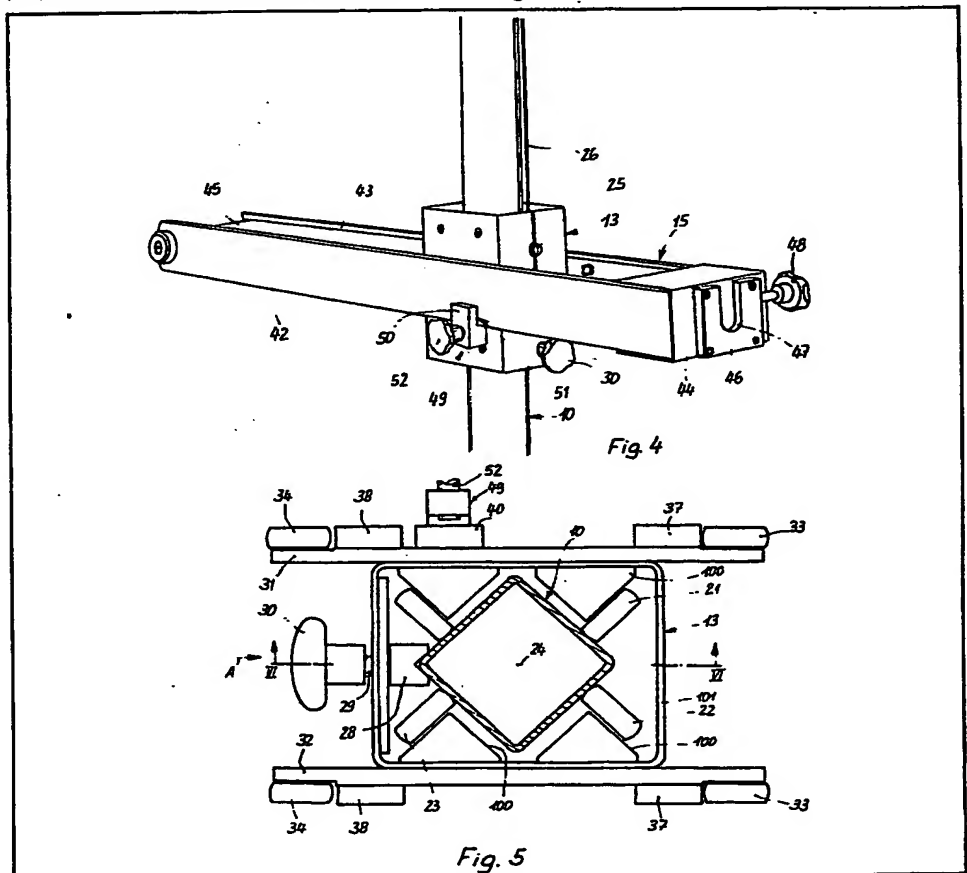
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(54) Stand

(57) A stand for mounting objects such as optical equipment, comprises an upright (10) with an object support arm (15) movable vertically and laterally

relative to the upright (10). A guide part (13) surrounds the upright (10) and is movable along the latter, and the support arm (15) moves horizontally on the part (13) and comprises two parallel parts (42, 43) which enclose the guide part (13) and are flanged inwardly to run on rollers (33-36) on the guide part (13). The guide part (13) also runs on rollers (20-23) on the upright (10) and the guide part (13) is provided with clamps (28-30, 49-52) which are operable to prevent the vertical movement of the guide part (13) on the upright (10) and the lateral movement of the arm (15) on the guide part (13). The support arm (15) has a handle 45 at one end, object mounting means (45, 17-19) at the other end and resilient buffers at each end to limit the lateral movement. A rope (26) is attached to the support arm (15) passes over a pulley (27) on top of the upright (10) and supports a balance weight inside the hollow upright.



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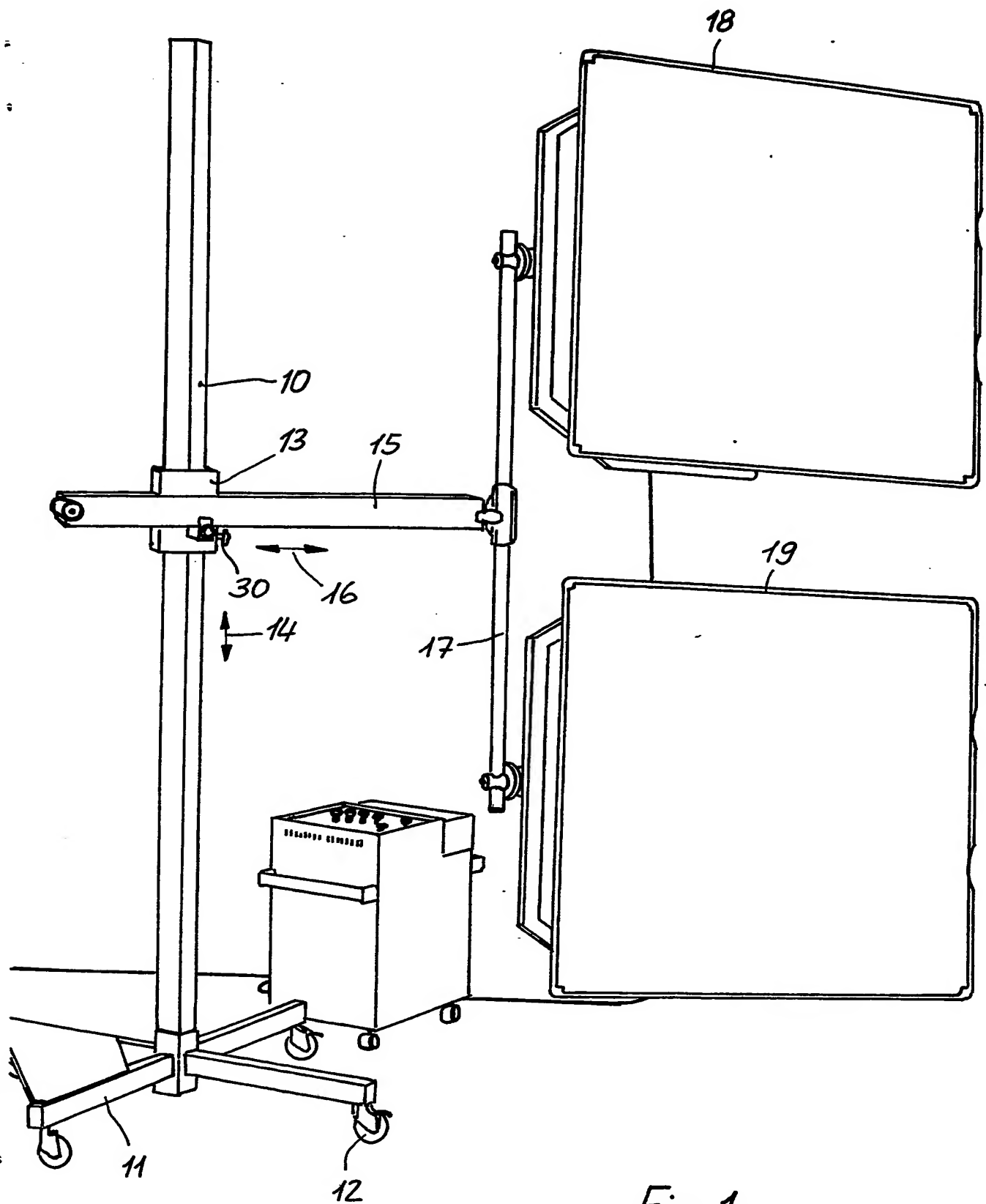


Fig. 1

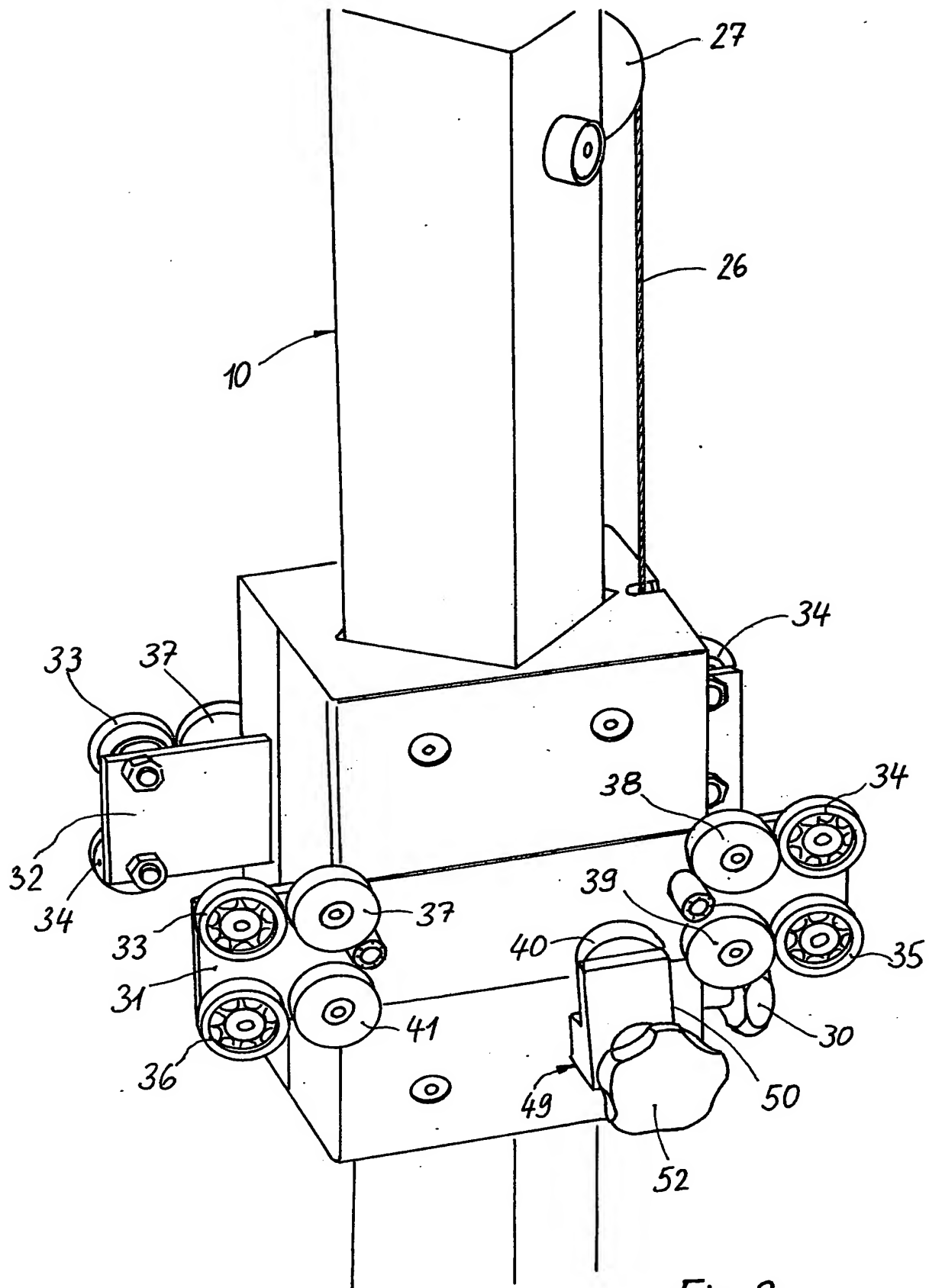


Fig. 2

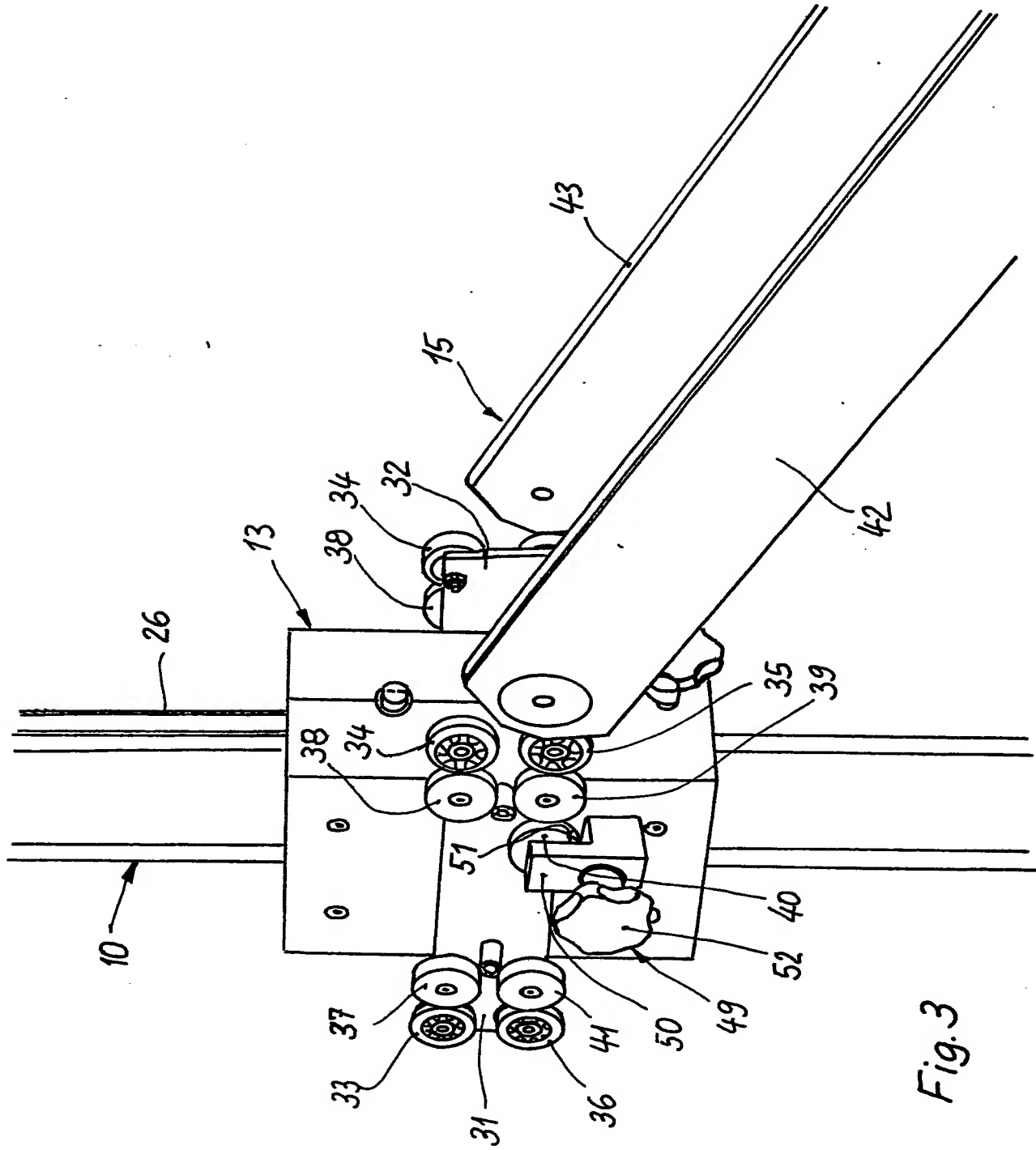


Fig. 3

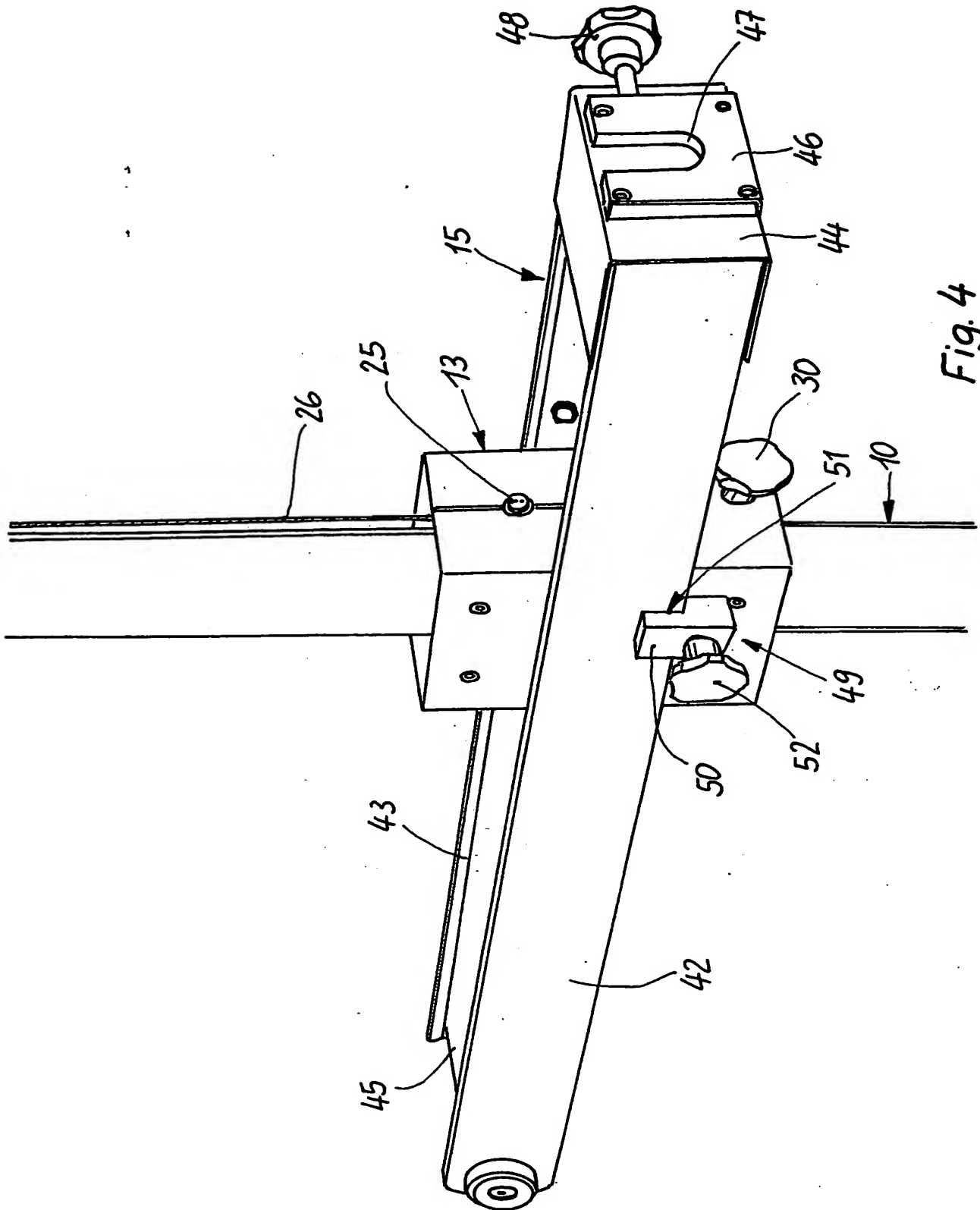


Fig. 4

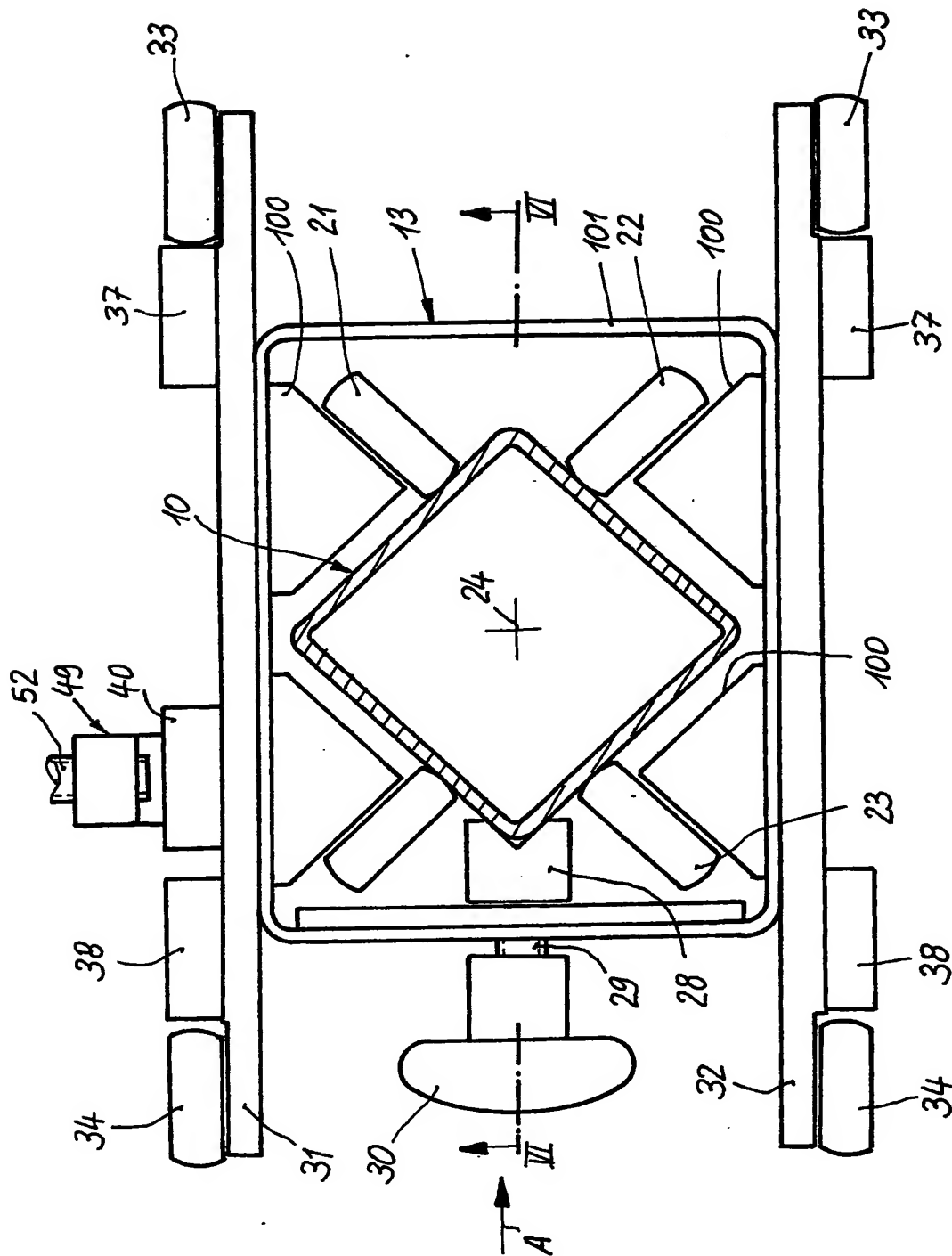


Fig. 5

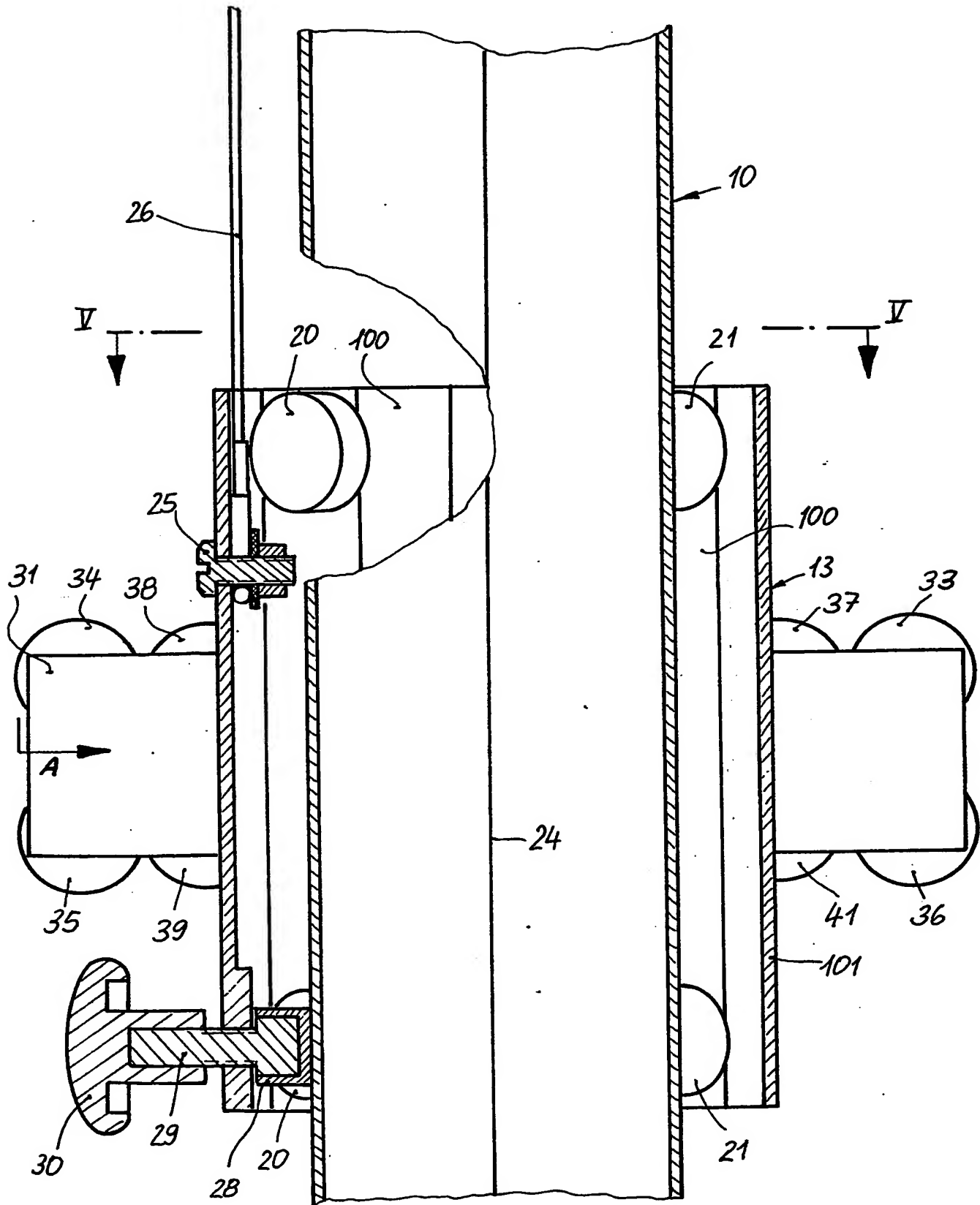


Fig. 6

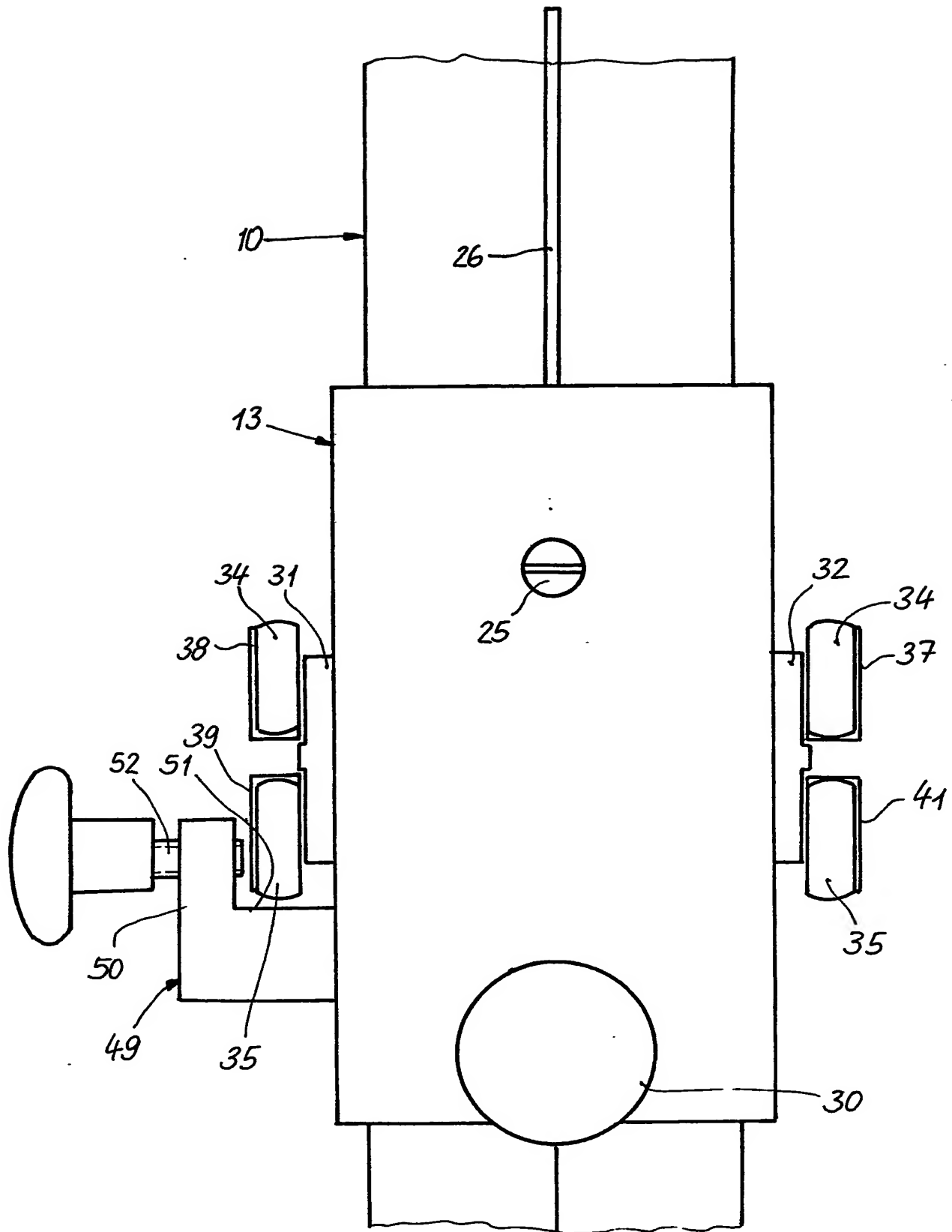


Fig. 7

SPECIFICATION

Stand

- 5 The invention relates to a stand for the mounting of objects having an upright, on which an object support arm is movable in the vertical and horizontal directions by engagement with a guide part surrounding the upright and able to move along the latter, the support arm being able to move in the horizontal direction with respect to the latter.

10 Stands of the aforementioned type are known. Normally attached to the lower end of the upright is a foot, which can be provided with freely swivelling rollers, so that the entire stand is constructed to move on the floor in all directions. Stands of the type in question serve for example for the vertically and laterally adjustable attachment of optical apparatus and equipment, such as for example telescopes, cameras, spot lights, picture screens and the like. In some cases, the objects to be attached to the stand have a considerable weight, which can lead to difficulties when adjusting the stand vertically and horizontally, in particular, this may lead to tilting in the region of the support arm.

15 The invention provides an easily adjustable, non-tilting stand in which the support arm is formed of two mutually parallel parts which enclose the guide part therebetween.

20 The invention enables the support arm to move horizontally and vertically with respect to the upright and with an easy action. Even when relatively heavy objects are attached to the stand, tilting does not occur, because the weight of the horizontally movable support arm and of the object supported by the latter is transmitted uniformly to the guide part.

25 A further advantageous development of the invention consists in that a traction rope acts on the guide part, which rope is guided at the upper end of an upright of hollow construction, and penetrates the inside of the latter, and that a weight is attached to the free end of the traction rope inside the upright. Since the weight of the object attached to the stand is counter-balanced by the weight attached to the traction rope, this measure has a very favourable effect as regards ease of movement of the guide part in the vertical direction.

30 In order that the stand is able to move easily in the horizontal direction, a further preferred feature of the invention provides that the support arm is likewise mounted to move with respect to the guide part on free-running guide rollers, in which case the guide rollers are appropriately mounted externally on the guide part.

35 Embodiments of the invention are illustrated in the drawings and in particular:

Figure 1 shows a stand in general perspective view;

40 *Figure 2* is a partial perspective view of the stand, on a larger scale than the illustration of *Figure 1* in which case the horizontally movable support arm has been omitted;

Figure 3 is an illustration similar to that of *Figure 2* but with a different perspective;

45 *Figure 4* is a further partial view of the stand, with

the support arm fitted, but without any load on the latter;

Figure 5 shows the upright of the stand with the vertically movable guide part (so called vertical slide) in cross-section (section line V-V of *Figure 6*);

50 *Figure 6* is a sectional view on line VI-VI of *Figure 5*; and

Figure 7 shows the subject of *Figures 5* and *6* looking in the direction of arrow A.

55 In the general illustration according to *Figure 1*, the reference numeral 10 designates the upright of the stand, which rests on a foot 11, in the shape of a cross, with four freely movable rollers 12. A guide part 13 (as the so called vertical slide) is mounted to move vertically (arrow 14) on the upright 10. The guide part 13 in turn carries a support arm 15, which is mounted to move in the horizontal direction 16 with respect to the guide part 13. The object supported by the stand is visible at the front end of the support arm 15. In this case the latter is a vertical tube 17 for example, to the top and bottom of which soft radiation lights 18, 19 are pivotally attached.

60 As is clear from the other *Figures*, in particular *Figures 5* to *7*, the upright 10 as well as the guide part 13 have rectangular cross-sections. Mounted inside the guide part 13 on prismatic roller supports 100 are four pairs of rollers 20-23, which consist respectively of two rollers located one above the other in the vertical direction. These rollers are conventional ball bearings with a synthetic material coating. As shown in *Figure 5*, each pair of rollers engages with one of the four outer surfaces of the upright 10, so that as the guide part 13 moves up and down, it is ensured that the latter is able to move easily even under high loads. In this case, the arrangement is such that the guide part 13 is turned through 45° with respect to the upright 10, about its longitudinal axis 24 so that the edges of the upright are located opposite the surfaces of the guide part. This association of the upright 10 and guide part 13 is a result of the pairs of rollers 20-23 being located inside the guide part 13 at an angle of 45° with respect to the side faces of the latter.

65 The illustrations according to *Figures 5* to *7* show clearly that the guide part 13 consists of a sheet metal casing 101 supporting and surrounding the prismatic roller supports 100. A traction rope 26, constructed as a wire rope, is attached by a screw 25 to the guide part 13, which rope is deflected by a roller 27 at the upper end of the upright 10 and guided into the inside of the upright 10 having a hollow construction. A lead weight (not shown) is attached to the end of the wire rope 26 located inside the upright 10, which weight forms a counterbalance for the guide part 13 and the objects supported by the latter. It is thus ensured that the guide part 13 is able to move easily in the vertical direction, in particular upwards. In contrast to stand which were known hitherto, in which the guide part was not guided on rollers, the stand according to the invention is characterised in particular by the fact that no tilting occurs even with considerable loads, but the guide part 13 is still able to move easily. In conjunction with the aforementioned traction rope 26 and the counter weight attached thereto, it is possible to

move loads of 36 kg and above on the stand, upwards, easily, using only one hand.

In order to be able to stop the guide part 13, with the objects attached thereto by way of the support arm 15, at the respectively desired height of the upright 10, a locking device is provided on the guide part 13. As shown in Figures 5 and 6, the locking device consists essentially of a clamping prism 28, which can be actuated by a screw 29. In this case, the screw 29 is located in a correspondingly tapped hole in the guide part 13. A grip handle 30 consisting of synthetic material serves for manual actuation of the screw 29. The clamping prism 28 serves not only for arresting the guide part 13 with respect to the upright 10, but also for centering the two parts 10 and 13. As shown in Figure 5, centering of the guide part 13 takes place solely on one side and in particular so that the pairs of rollers 21, 22 are subjected to compressive stress. Thus, the two pairs of rollers 21, 22 are pressed against the upright 10.

In the stand according to the invention, not only is the guide part 13 mounted on free-running rollers with respect to the upright 10, but a corresponding guide is also provided for the horizontally moving support arm 15 with respect to the guide part 13. As shown in Figures 2 to 7, plates 31, 32 are screwed to two opposite sides of the guide part 13, which plates respectively support four guide rollers 33-36 for the support arm 15. Like the roller 20-23 for mounting the guide part 13 with respect to the upright 10, the guide rollers 33-36 for the support arm 15 are constructed as simple ball bearings and provided with a synthetic material casing or sleeve.

The guide rollers 33-36 for the support arm 15 are respectively mounted in pairs one above the other at the ends of the plates 31, 32, i.e. on each side of the guide part 13. They serve as pure rollers for receiving the weight of the support arm 15 and the object 17, 18, 19 attached thereto.

Apart from the guide rollers 33-36, the plates 31, 32 also support five disc-shaped spacing means 37-41, which, as shown in Figures 5 and 7, are situated internally of and project laterally beyond the contours of the guide rollers 33-36. The spacing means 37-41 always keep the support arm 15 in a predetermined position with respect to the guide part 13. With the exception of the part 40, they are arranged in pairs in the same manner as the guide rollers 33-36.

As shown in Figures 3 and 4, the support arm 15 consists essentially of two parts 42, 43 arranged parallel with respect to each other and which enclose the guide part 13 therebetween. At the top and bottom, the two parts 42, 43 of the guide arm 15 respectively comprise edges bent inwards at right angles, they are thus respectively constructed as a double rail. By means of the edges bent inwards, the parts 42, 43 are respectively mounted on the guide rollers 33-36. A uniform transmission of weight to the guide part 13 is ensured by the divided construction and symmetrical arrangement of the support arm 15 on both sides of the guide part 13, so that tilting of the support arm 15 with respect to the guide part 13 can no longer occur. The central axis of the support arm 15 thus intersects the central axis of the

upright 10 or of the guide part 13. The symmetrical arrangement of the divided support arm 15 at the same time provides a certain saving of space, because on account of the smaller loads caused thereby, the bearing dimensions can be smaller than in the known one-sided arrangement of the support arm with respect to the guide part. The construction described and illustrated allows a length of the support arm 15 of approximately 1 metre, of which approximately 75 cm can be extended. Even with considerable weights - objects weighing 36 kg and above can be attached to the support arm 15 - the stand is still completely stable when the support arm 15 is fully extended and can be moved in all directions without a considerable consumption of energy. As shown in particular in Figure 4, the two parallel parts 42, 43 of the support arm 15 are held together at their two ends respectively by a transverse connection 44, 45 and thus simultaneously kept at a predetermined distance apart. In this case, the transverse connection 44 simultaneously serves as a holder for the object 17, 18, 19 (Figure 1) to be attached to the stand. For this purpose an adaptor member 46, with a U-shaped holder 47 for the object to be attached, is screwed to the transverse connection 44. A manually-operated screw 48 serves for arresting the object, 17, 18, 19 for example, suspended from the support arm 15. Naturally, the adaptor member 46 may have any other shapes according to the object to be attached to the stand.

On the other hand, the connecting member 45 at the opposite end of the support arm 15 is constructed in the form of a roller and simultaneously serves as a handle for the horizontal and vertical movement of the support arm 15.

In order to be able to lock the support arm 15 in its respective horizontal position, as shown in particular in Figures 5 and 7, a locking device 49 is provided on the guide part 13. This locking device consists essentially of an angular clamping block 50 with an angular recess 51, in which one rail-like part 42 of the support arm 15 engages from above. The rail-like part 42 is constructed to be adjusted by means of a hand-operated screw 52 in its distance from the spacing means 37-41. The lateral clearance of the support arm 15 is determined in this way. Thus, by actuating the screw 52 - according to the direction of actuation - the support arm 15 can be pressed against the spacing means 37-41 and thus slowed down or released after a previous slowing down operation. Serving as a front and rear limit for the horizontal movement of the support arm 15, stops respectively constructed as rubber buffers are located inside the rail-like parts 42, 43, which come to bear against the associated outer rollers, in the extended position. The rubber buffer is so large and is located at such a slight distance from the ends of the arm that it is impossible for a finger to be jammed between the guide part and the arm.

CLAIMS

1. A stand for the mounting of objects having an upright, on which an object support arm is movable in the vertical and horizontal directions by engage-

ment with a guide part surrounding the upright and able to move along the latter, the support arm being able to move in the horizontal direction with respect to the latter, characterised in that the support arm is

5 constructed in two parts so that it encloses the guide part between its two parts which are located parallel to each other.

2. A stand according to claim 1, characterised in that each of said parallel parts of the support arm is

10 provided with flanged longitudinal edges.

3. A stand according to claim 1 or claim 2, characterised in that the support arm is mounted to move horizontally with respect to the guide part on free-running guide rollers provided on a pair of

15 opposite sides of the guide part.

4. A stand according to claim 3 wherein on each of the two opposite sides of the guide part, at least four guide rollers are respectively mounted in pairs one above the other.

5. A stand according to claim 4 wherein attached in a releasable manner to each of the two opposing surfaces of the guide part is a roller support plate on which said guide rollers are mounted so that each pair of rollers is respectively located at an end of a

25 roller support plate.

6. A stand according to claim 5, characterised in that also attached to each roller support plate are disc-shaped spacing means which project laterally beyond the contours of the guide roller.

7. A stand according to any one of claims 1 to 6 characterised in that the two parallel parts of the support arm enclosing the guide part therebetween are interconnected at their two ends by cross members.

8. A stand according to claim 7 wherein one cross member is constructed as a handle for moving the support arm and the other cross member is constructed as a retaining part for objects to be attached to the stand in a releasable manner.

9. A stand according to any one of claims 1 to 8, characterised in that stops constructed as rubber buffers are provided on the support arm for limiting the horizontal movement thereof.

10. A stand according to any one of claims 1 to 9, characterised in that a locking device is provided on the guide part as a stop for the vertical movement of the guide part on the upright.

11. A stand according to any one of claims 1 to 10, wherein a locking device is provided on the guide

50 part as a stop for the horizontal movement of the support arm.

12. A stand according to claim 3, characterised in that the free-running rollers are constructed as ball bearings with a synthetic material coating.

13. A stand according to any one of claims 1 to 12 characterised in that located inside the guide part are free-running rollers, which contact the outer surfaces of the upright.

14. A stand according to claim 13 characterised in that the upright has a rectangular cross-section and mounted inside the guide part, like-wise having a rectangular cross-section are four pairs of rollers.

15. A stand according to claim 14 characterised in that co-operating with each of the four outer

65 surfaces of the upright is a pair of rollers located

vertically one above the other.

16. A stand according to claim 14 or claim 15 wherein the guide part is aligned at 45° with respect to the surfaces of the upright so that the edges of the

70 upright are located opposite the surfaces of the guide part and that the rollers inside the guide part are arranged diagonally or substantially diagonally thereof.

17. A stand according to any one of claims 1 to 16, characterised in that acting on the guide part is a traction rope which is guided at the upper end of the upright which is of a hollow construction and said rope projects into the inside of the upright and has a weight fastened to the free end thereof within the

80 upright.

18. A stand for the mounting of objects substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.

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